

# CRIMSON ENGINE

**2008 Crimson**



# CRIMSON ENGINE

## Unit specifications

☀ Unit height:	9' 6"
☀ Unit length:	32' 6"
☀ Unit width:	9'9"
☀ Unit empty weight:	31,800 lb.
☀ Unit GVWR weight:	47,000 lb.
☀ Fuel tank:	63 gallon
☀ Engine:	450 hp Cummins ISM
☀ Alternator:	400 amp Leece Neville
☀ Tires:	Front: 365/65R 22.5    Pressure: 110 psi Rear: 12R/22.5        Pressure: 120 psi
☀ Generator:	7500 watt Onan continuous use

# CRIMSON ENGINE

## Fluid specifications

☀ Engine oil :	<b>15W – 40 CJ4</b>
☀ Engine coolant:	<b>50/50 mix of Final Charge</b>
☀ Power steering fluid:	<b>Dexron III</b>
☀ Transmission fluid:	<b>Trans – Synd</b>
☀ Cab lift fluid:	<b>Dexron III</b>
☀ Generator engine oil:	<b>10W – 30</b>
☀ Generator engine coolant:	<b>50/50 mix of Final Charge</b>

# CRIMSON ENGINE

## Warning

**This vehicle is equipped with a Drive Cam audio and video recording device. All conversation and activity occurring in this vehicle is being recorded.**

## Disclaimer

The drive cam records continuously while the motor is running. The device saves audio and video in any G-force incident. In a G-force incident, the tape records and saves ten seconds before the incident and ten seconds after the incident. This gives a total of 20 seconds of saved tape.



# CRIMSON ENGINE

## Stability Roll System

- ☀ The roll stability control is a ABS based system designed to help you manage road conditions that can lead to vehicle rollovers.
- ☀ The roll stability control is automatic.
- ☀ This function is controlled through the ECU.
- ☀ In a roll stability event up to three actions can occur.
  1. Decrease in engine power
  2. Retarder Activation
  3. Brakes being applied

# CRIMSON ENGINE

## Stability Roll System



- ☀ When starting the unit the light will illuminate and go off
- ☀ In the event of a SRS incident the yellow light in the right upper dash will illuminate.
- ☀ If the light illuminates and remains on a fault has been detected. Notify the shop immediately

# CRIMSON ENGINE

## RollTek



- The RollTek system is designed to deploy air bags, lower air suspension seats and tighten seat belts, in a rollover situation.
- All of the above events occur in two-tenths of a second.
- The RollTek system records eight seconds of data before the rollover and two seconds after the event.

# CRIMSON ENGINE

## RollTek

### There are four stages of the RollTek system.

1. Sensing - As the vehicle begins to roll, the roll sensor activates the RollTek protection devices.
2. Pretensioning - The pretensioning system automatically tightens the seat belt around the occupant, preventing movement and positioning the occupant securely in the seat.
3. Positioning - The S4 seat pull-down system pulls the suspension seat to its lowest position and holds the seat in place, increasing the occupant survivable space and minimizing head contact with the interior roof.

# CRIMSON ENGINE

## RollTek

4. Deployment - The side airbag deploys across the window, protecting the head and neck during impact

## Overview

RollTek is the combination of seat belts and supplemental restraint systems that make it so effective. Although an unbelted passenger may be afforded some protection by the airbags, seat belts are the core restraining device of the RollTek rollover protection system. Occupants must be seated and belted!

# CRIMSON ENGINE

## RollTek

### WARNING

- ☀ Do not store loose equipment around the seats which could entangle with the seat tension device.
- ☀ Do not drill or mount any equipment without the permission of the Apparatus Chief.
- ☀ Do not alter the seat belts in anyway.



# CRIMSON ENGINE

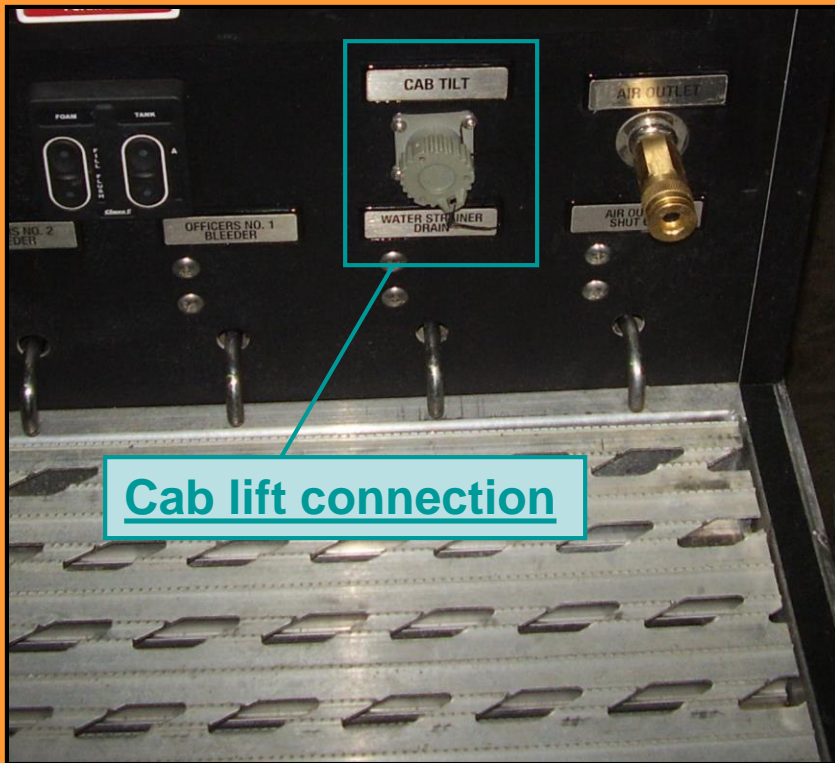
## Raising the cab



- ☀ Before raising the cab make certain all equipment in the cab is secure. Remove loose equipment
- ☀ The unit must be on level ground to prevent twisting of the cab.
- ☀ The battery switch must be on, and the ignition switch off, with the parking brake set.

# CRIMSON ENGINE

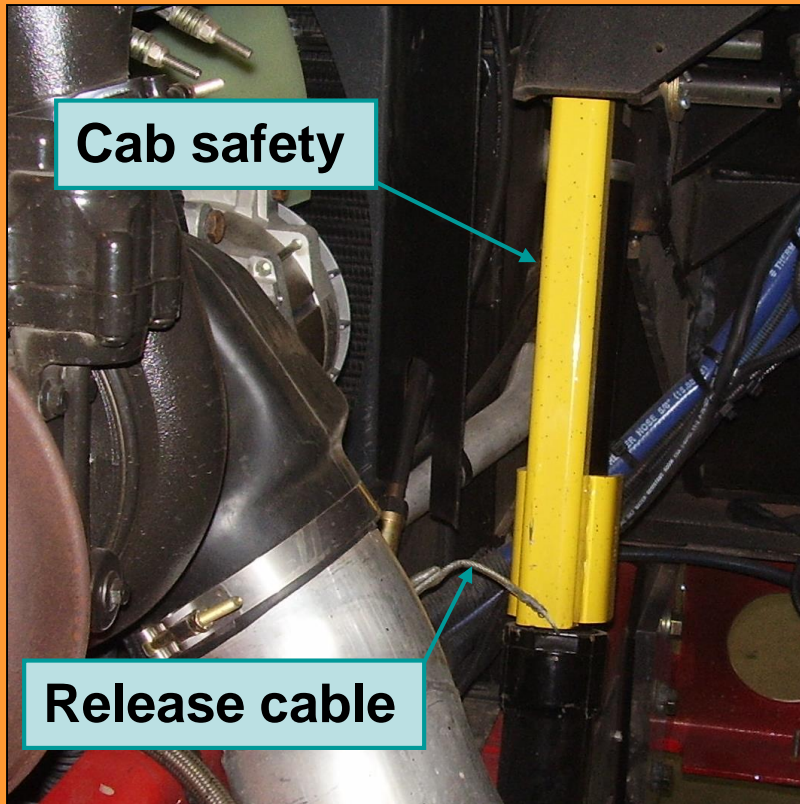
## Raising the cab



Connect the cab control to its receptacle and depress the up button to raise the cab.

# CRIMSON ENGINE

## Raising the cab

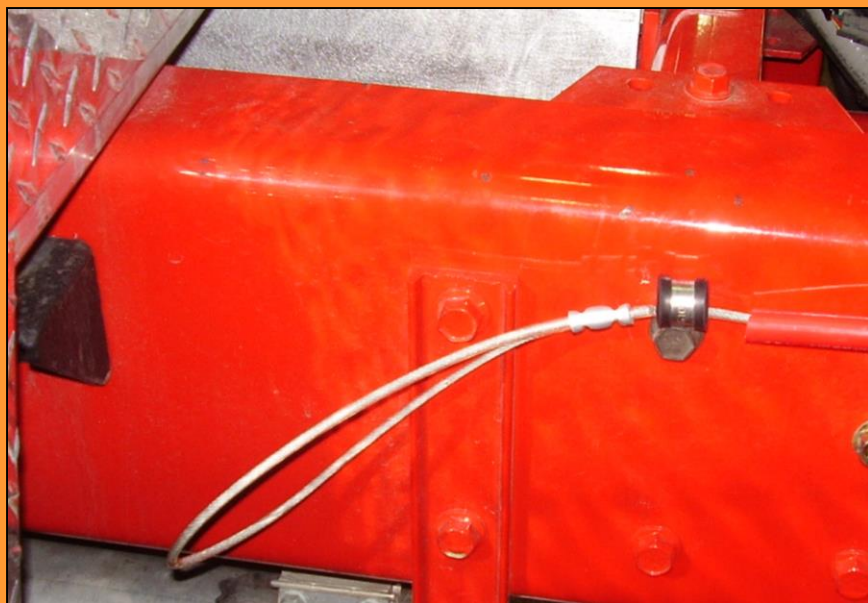


- ☀ Before raising the cab insure that the compartment doors on the grill are closed.
- ☀ Raise the cab until you hear the safety fall against the cylinder and stop.
- ☀ **DO NOT LOWER THE CAB BACK DOWN ONTO THE CYLINDER**



# CRIMSON ENGINE

## Lowering the cab



Safety release cable

- ☀ To lower the cab pull the release cable and depress the down button on the hand controller.
- ☀ Hold the release cable for five seconds and release.
- ☀ **IF THE CAB DOES NOT COME DOWN OR STOPS ITSELF YOU MUST RERAISE THE CAB OFF OF THE CYLINDER.**

# CRIMSON ENGINE

## Lowering the cab



- ☀ Depress the down button and hold until cab comes to a stop.
- ☀ Continue to hold the down button until the red light on the controller begins to blink
- ☀ The cab is now secure and you may disconnect the controller.

# CRIMSON ENGINE

## Manual cab lift operation



**This is located behind the left battery box.**

- ☀ If the electric cab lift fails to raise the cab this is the emergency manual pump.
- ☀ To operate the cab lift insert jack handle and pump.
- ☀ Lift cab until the safety engages on the right lift cylinder.



# CRIMSON ENGINE

## Manual cab lift operation

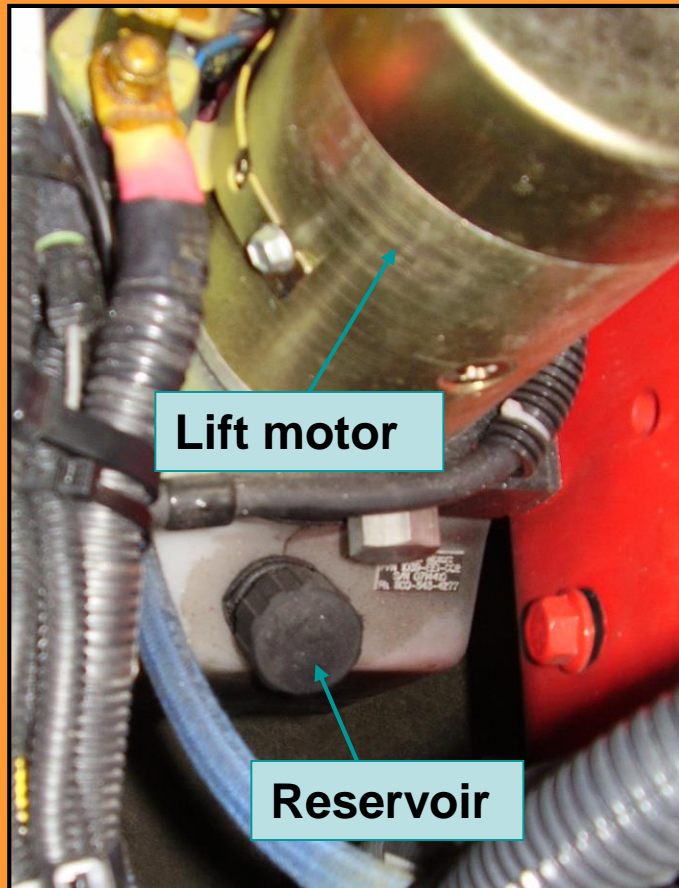


This valve is located under the body of the manual cab raise location.

- ☀ When lowering the cab the operator must loosen this screw to allow the fluid to return to the reservoir.
- ☀ If the cab does not return on electrical current this valve can be used as a override.

# CRIMSON ENGINE

## Cab lift motor and reservoir



- ☀ This unit is located on the left side frame rail.
- ☀ Make sure that the cab lift reservoir has the proper fluid level.
- ☀ Hydraulic fluid for the cab lift unit will be added by the mechanic.

# CRIMSON ENGINE

## Engine fluid check



Behind the right front grill panel is the oil dipstick and oil fill.



Behind the left front grill panel is the windshield reservoir fill.

Always secure grill panels  
before raising the cab

# CRIMSON ENGINE

## Engine fluid check



- ☀ Make sure antifreeze is visible in the sight glass.
- ☀ If antifreeze is needed add Final Charge 50/50 mix.



# CRIMSON ENGINE

## Engine fluid check

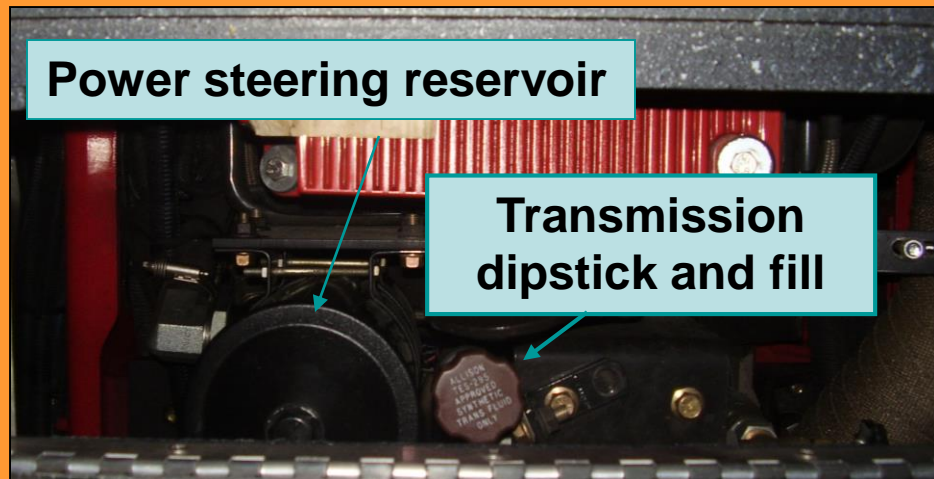


Power steering reservoir

- ☀ The power steering reservoir is located on the rear of the engine.
- ☀ This fluid can be checked with the fluid being hot or cold.

# CRIMSON ENGINE

## Engine fluid check



Power steering reservoir

Transmission  
dipstick and fill

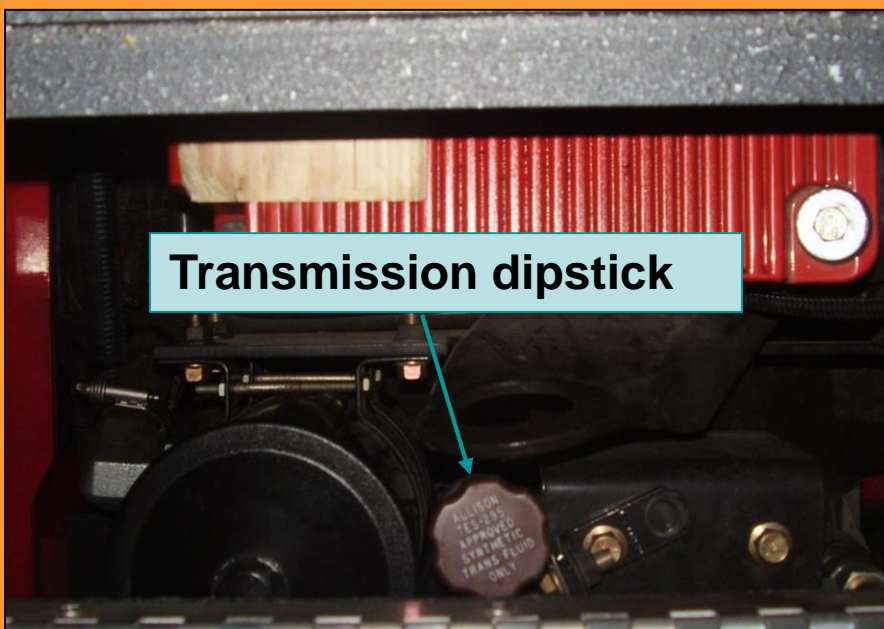
☀ The picture on the left shows the power steering reservoir and transmission dipstick and fill.

**This is looking thru the engine compartment door in the crew area.**



# CRIMSON ENGINE

## Manual Transmission fluid check



- ☀ The transmission fluid level can be checked two ways.
- ☀ Checking the transmission thru the engine cover opening.
- ☀ Checking the transmission thru the keypad.
- ☀ After transmission has been brought to at least 140 degrees and at idle remove the transmission dipstick and the fluid should be at the hot full mark.

# CRIMSON ENGINE

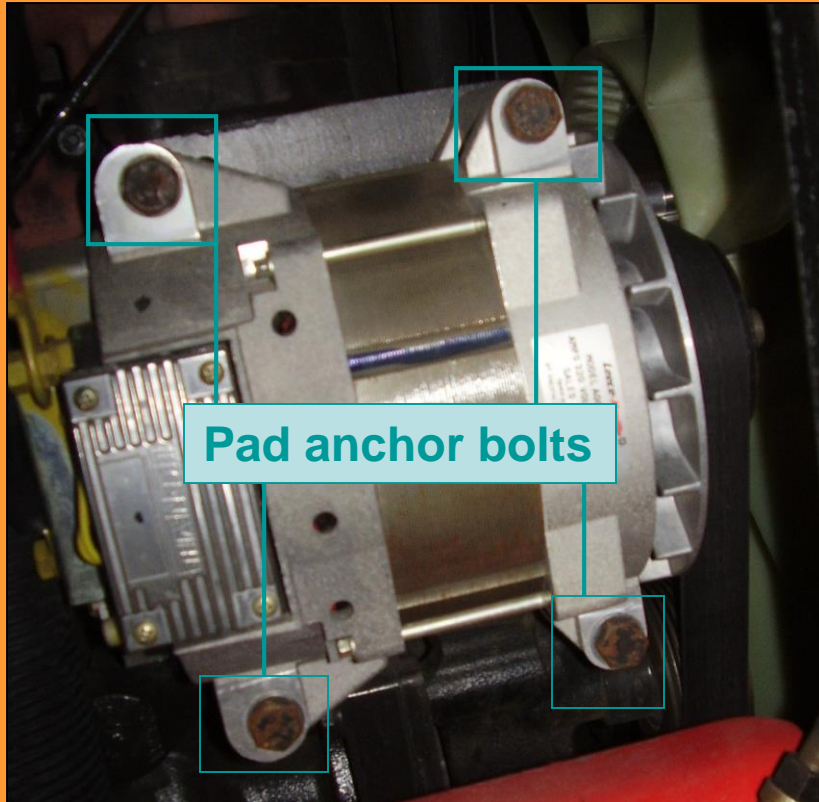
## Electronic Transmission fluid check



- ☀ After the transmission has reached at least 140 degrees park the unit on level ground.
- ☀ Let the engine idle for at least five minutes. (not fast idle)
- ☀ Push the up and down arrow on the keypad at the same time and release.
- ☀ On the display it will read OL  
OK, OL-LO and a number or  
OL-HI and a number.
- ☀ The number represents the number quarts low or high.

# CRIMSON ENGINE

## Alternator



- ☀ The alternator is a 400 amp. pad mounted Leece Neville alternator.
- ☀ The alternator is secured to pad by four bolts.
- ☀ On the weekly check always check these bolts to ensure that they are not loose.



# CRIMSON ENGINE

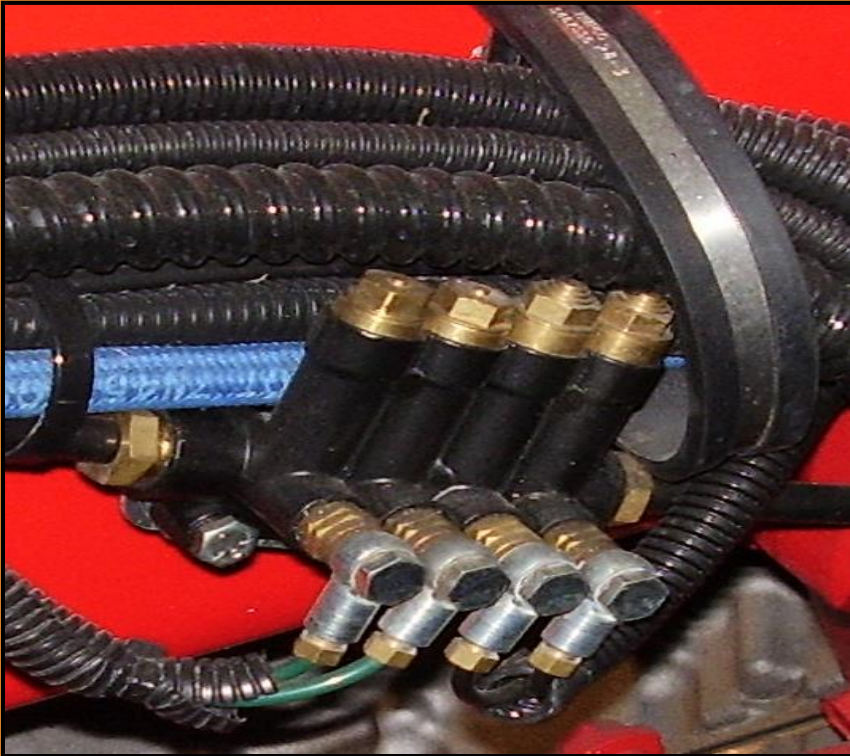
## Vogel lube system



- ☀ The vogel lube system is a automatic lubrication system.
- ☀ The Vogel lube reservoir is located behind the left battery box on the frame rail.
- ☀ At a predetermined interval it will lubricate components on the truck.
- ☀ Make sure that there is fluid above the minimum line in the reservoir
- ☀ Only the mechanic will add the Vogel lube fluid.

# CRIMSON ENGINE

## Vogel lube system

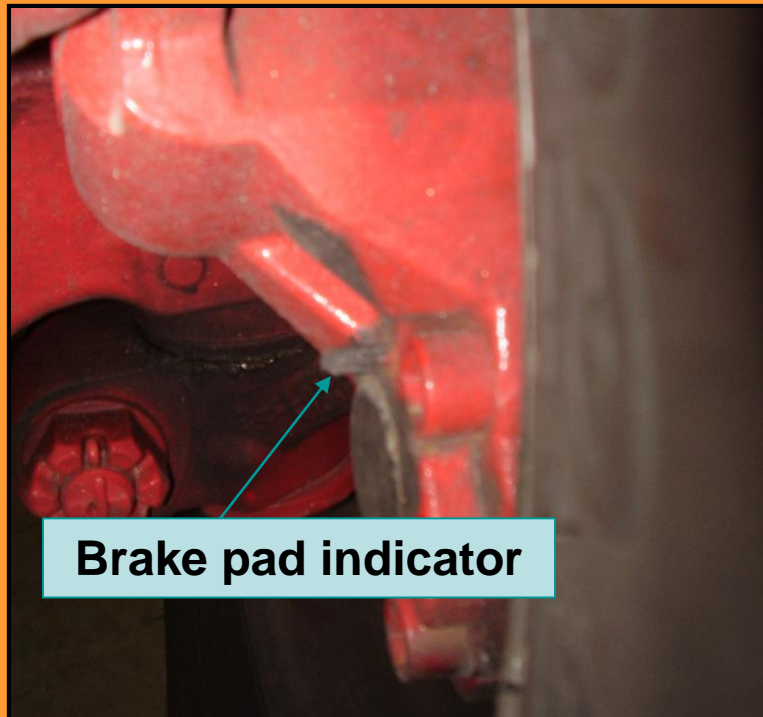


Vogel lube distribution port

- ☀ The Vogel lube leaves the reservoir and enters distribution ports.
- ☀ The fluid then leaves the ports and is applied to the specified part.
- ☀ Always check for leaks at these ports and on the hoses leading to the vehicle.

# CRIMSON ENGINE

## Brakes



Brake pad indicator

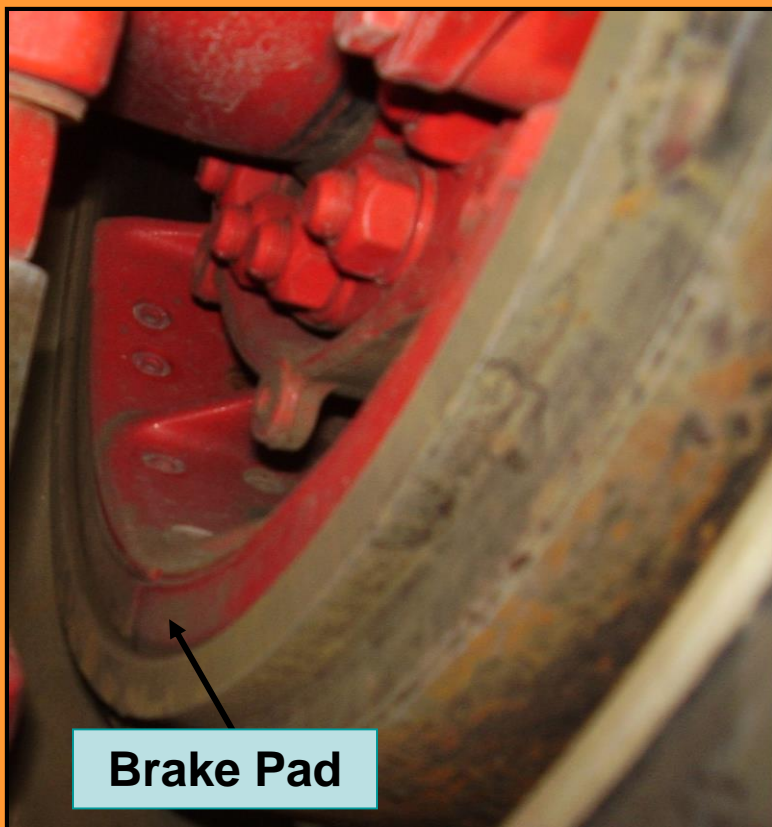
- ☀ The front brakes are disc brakes.
- ☀ To check pad thickness look at the indicator pin on the brake caliper.
- ☀ As long as you see the pin the brakes are at correct thickness.

The brake indicator pin can be black or red in color



# CRIMSON ENGINE

## Brakes



- ☀ The rear brakes are drum brakes.
- ☀ There are no dust covers so the brake pads can easily be seen.
- ☀ You must have at least 1/4" brake pad.
- ☀ The brake pads and brake drums shall be free of grease and oil.

# CRIMSON ENGINE

## Shoreline power



- ☀ This component is located on the left step well of the drivers door.

# CRIMSON ENGINE

## 12 volt jumper studs



These jumper studs are located on the left step well.

- ☀ When jump starting a unit it is in this order:
- ☀ 1. Live red to dead red
- ☀ 2. Dead black to a grounding point on the starting vehicle

# CRIMSON ENGINE

## Crossfire tire air pressure monitor



☀ Crossfire monitors have three inner panels consisting of three different colors.

1. Yellow with one broken black line.

2. Solid Black

3. Solid Red

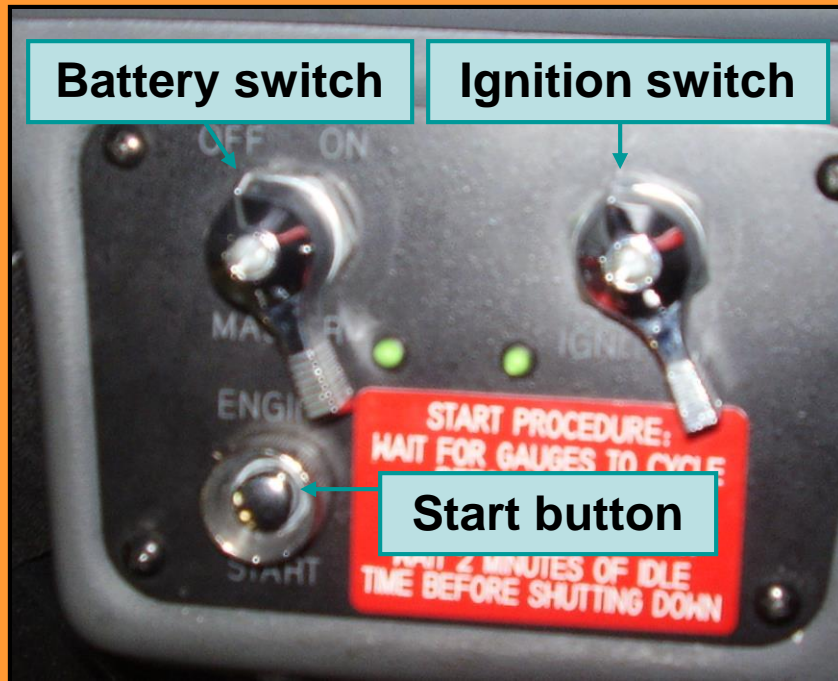
☀ The outside panel is yellow with one broken black line.





# CRIMSON ENGINE

## Starting the Unit



- ☀ First cycle the battery switch to the on position.
- ☀ Cycle the ignition switch to the on position.
- ☀ Wait 5 seconds before depressing the start button.
- ☀ Before engine shutdown try to let the engine idle for 2 minutes before shutting it down.

When shutting down the engine turn the ignition switch off first.



# CRIMSON ENGINE

## Gauges



- ☀ The following gauges are on the left side of the dash.
- ☀ The primary air system is for the rear brakes.
- ☀ The secondary air system is for the front brakes.
- ☀ The tachometer registers the engine rpms in hundreds.

# CRIMSON ENGINE

## Gauges



- ☀ These gauges are located on the right side of the dash.
- ☀ The upper left gauge is the speed odometer.
- ☀ The lower right gauge is four separate gauges consisting of: Coolant temp. Voltage, Oil pressure, Transmission temp.

# CRIMSON ENGINE

## Driving modes

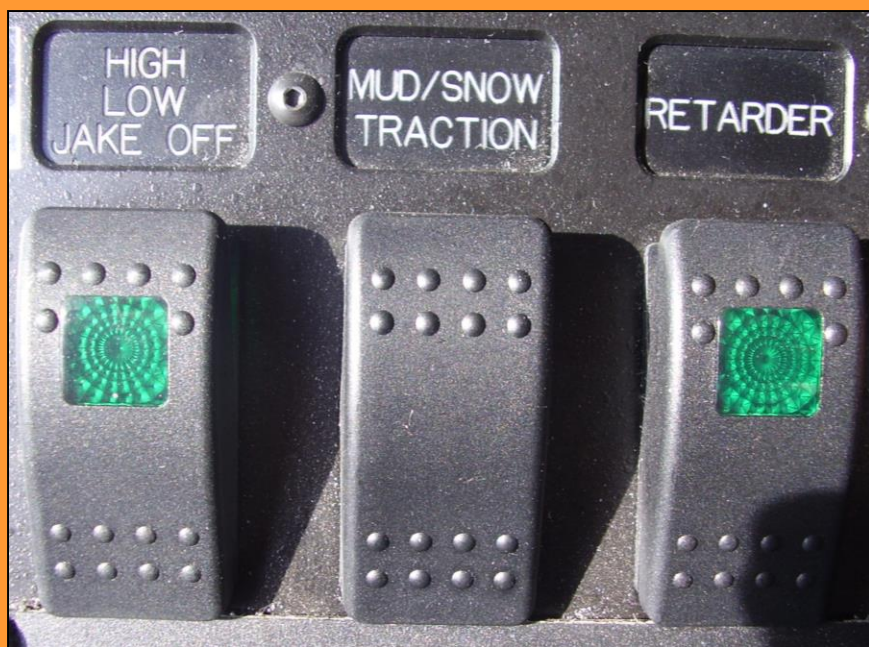


- ☀ The transmission has five road gears.
- ☀ When the D (drive) mode is selected you have four forward gears.
- ☀ After the D (drive) mode has been selected and 5<sup>th</sup> gear is desired the operator must depress the mode button for the fifth gear.
- ☀ For city driving use the D mode.
- ☀ For interstate driving use the mode button.



# CRIMSON ENGINE

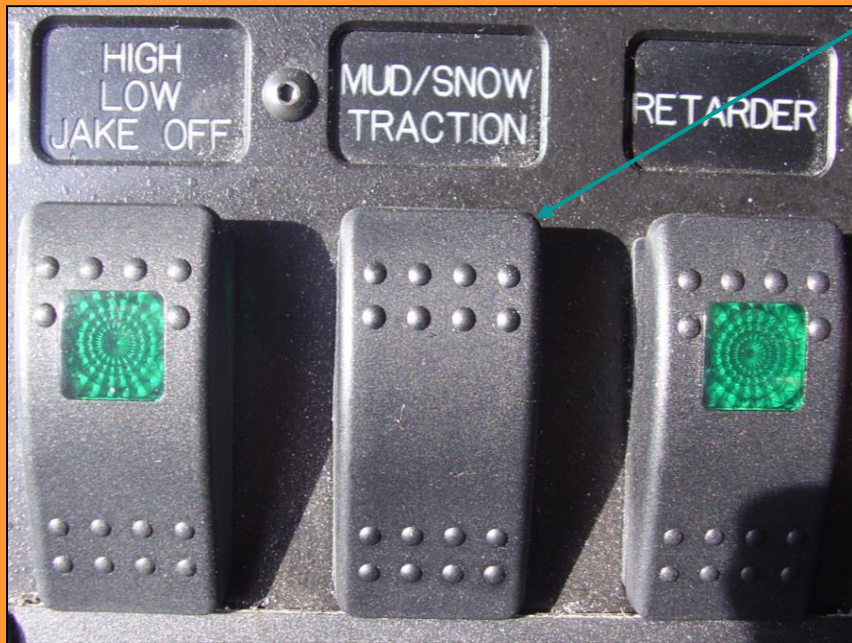
## Mud and snow traction



- ☀ In normal driving conditions if the drive wheels lose traction the ATC light will illuminate on the dash.
- ☀ When the ATC light on the dash illuminates either the brake is being applied to the spinning wheel or the engine is being powered down to regain traction.

# CRIMSON ENGINE

## Mud and snow traction



- ☀ This switch deactivates the traction control allowing the rear wheels to spin.
- ☀ Do not spin tires in mud.
- ☀ Take the slope of the terrain in to account when utilizing the differential lock.



# CRIMSON ENGINE

## Telma auxiliary braking device



- ☀ The Telma retarder has a on and off switch.
- ☀ The Telma retarder is a electro magnetic braking device.
- ☀ When you lift off the accelerator two stages of the Telma engage.
- ☀ When you depress the brake pedal the last two stages engage.
- ☀ Turn this device off in slippery conditions

# CRIMSON ENGINE

## Jacobs brake



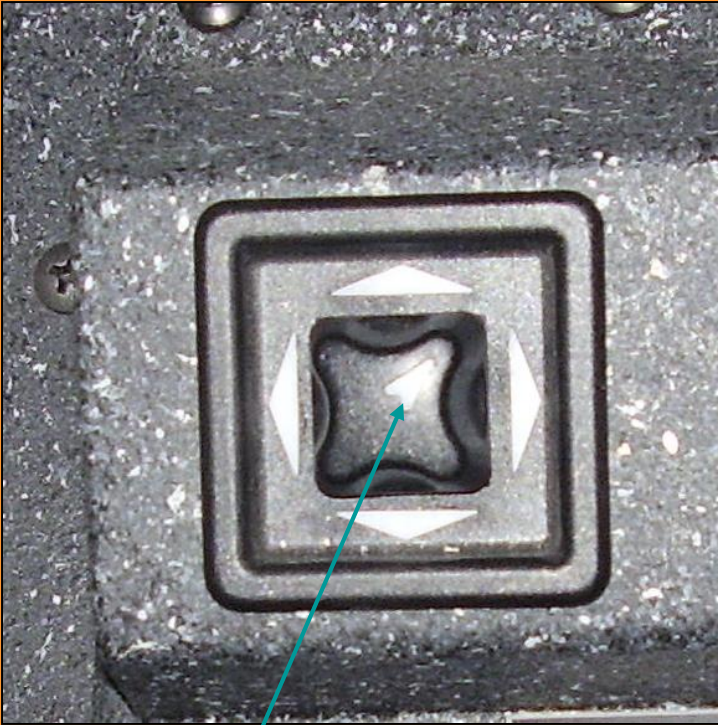
Jacobs brake

Telma retarder switch

- ☀ The Jacobs brake is a two stage engine brake.
- ☀ Toggle the switch all the way up for high, the middle position is for low and all the way down is off.
- ☀ The Jacobs brake and the telma retarder can be used in conjunction with each other.
- ☀ Turn this device off in slippery conditions

# CRIMSON ENGINE

## Mirror control



The arrow is pointing to the right side mirror

- ☀ The mirror control selector is located above the transmission keypad.
- ☀ The mirrors can be pitched up and down, left and right.
- ☀ The mirrors are also heated.
- ☀ To operate place the arrow on the corresponding mirror and operate the switch.



# CRIMSON ENGINE

## On Spot chains



- ☀ The On-Spot chain switch is a two stage switch.
- ☀ Release the center lock and toggle the switch up.
- ☀ Chains can be engaged below 25 MPH.
- ☀ Road speed will be no greater than 35 MPH.
- ☀ Chains can be used up to six inches of snow
- ☀ Pickup chains while tires are in motion



# CRIMSON ENGINE

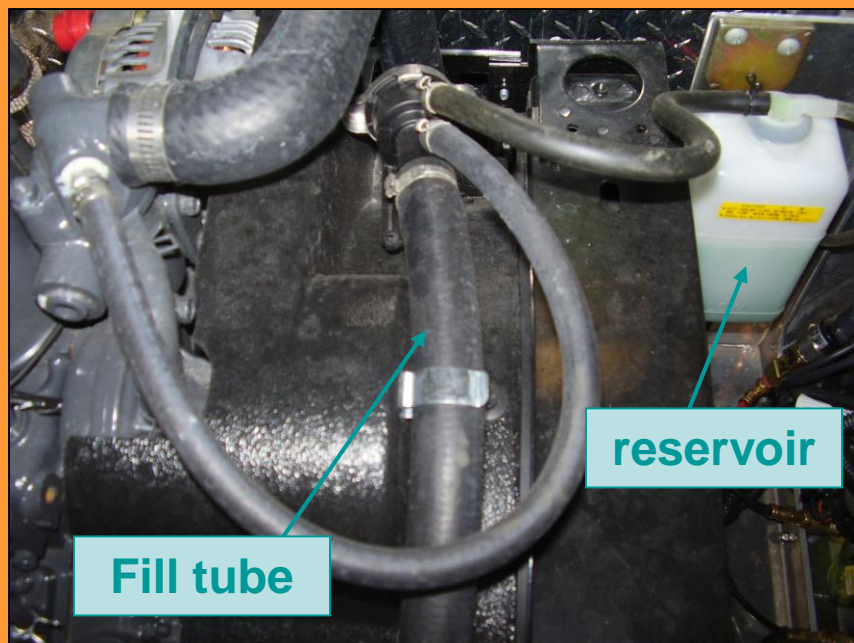
## Onan 7500 watt generator



- ☀ The generator is a Onan 7500 watt continuous use.
- ☀ The generator can be started from the cab, pump panel and at the generator itself.
- ☀ When checking the generator run with a electrical load applied.

# CRIMSON ENGINE

## Onan 7500 watt generator



- ☀ The antifreeze mixture is a 50/50 mix of Final Charge antifreeze.
- ☀ If antifreeze must be added to the radiator you must unclip the hose to fill.
- ☀ Be certain the reservoir is at the proper level.

# CRIMSON ENGINE

## Onan 7500 watt generator



- ☀ The engine oil dipstick is located behind the alternator.
- ☀ When engine oil is needed add 10w-30



# CRIMSON ENGINE

## Onan 7500 watt generator



Start switch

- ☀ To start the generator you must pre-heat the unit.
- ☀ Hold the start switch to the stop/preheat position for 10 seconds and immediately start the generator.
- ☀ Hold the start switch until the generator starts then release.
- ☀ Do not hold the start switch for longer than 15 seconds.



# CRIMSON ENGINE

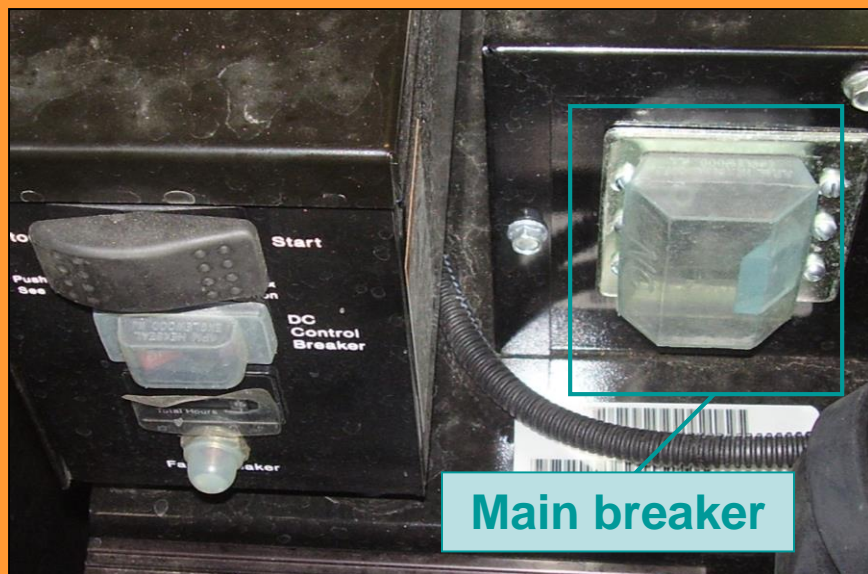
## Onan 7500 watt generator



- ☀ When the generator is running the AC volt meter will show the electrical output.
- ☀ If the generator is running and there is no electrical output, you must reset the main breaker on the generator.

# CRIMSON ENGINE

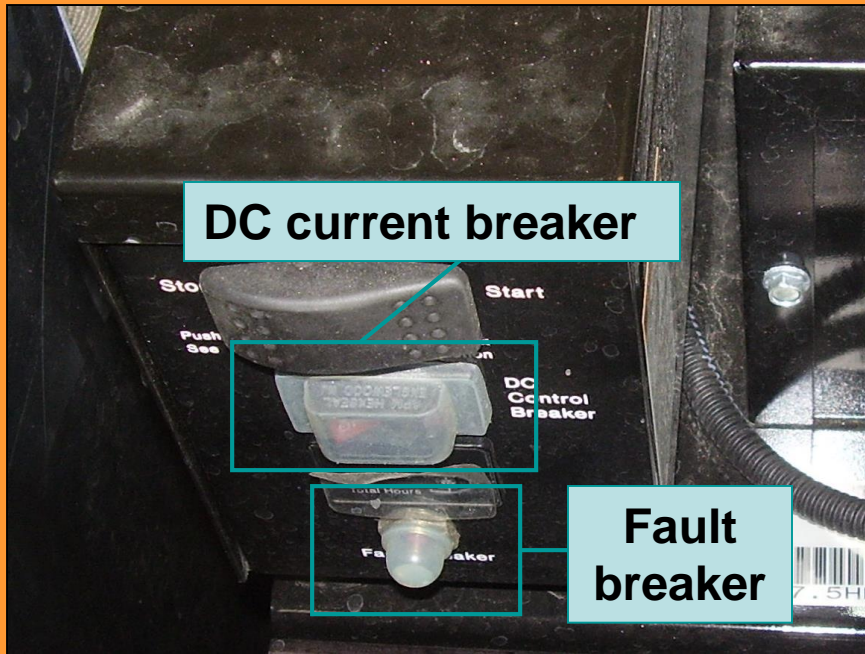
## Onan 7500 watt generator



This is the main breaker that must be reset if no power is present on the volt meter.

# CRIMSON ENGINE

## Onan 7500 watt generator



- ☀ If the generator cannot be started from the cab or pump panel the DC current breaker has tripped.
- ☀ If the generator is running and shuts down the fault breaker could have tripped.
- ☀ The fault breaker trips when coolant temperature has been exceeded or low oil pressure has been sensed.

# CRIMSON ENGINE

## Onan 7500 watt generator



Start switch

- ☀ When it is time to shut down the generator do the following.
  1. Remove all electrical loads.
  2. Allow generator to continue to run for about three minutes.
  3. Touch the control switch momentarily to stop.



# CRIMSON ENGINE

## Air tank drains



- ☀ Under the drivers side running board there are two pull cords.
- ☀ One cord is to the wet air tank.
- ☀ The other cord is to the primary brake air tank.
- ☀ Drain these tanks to zero weekly.

# CRIMSON ENGINE

## Towing Glad hands



- ☀ The photo on the left shows the emergency tow gland hands.
- ☀ These are used when the vehicle has to be towed and they allow the tow truck to run air to the brakes.
- ☀ The glad hands are covered to keep road dirt and debris out.
- ☀ If these covers are lost contact the shop for replacement